# 5. Site Overviews

This section provides overviews of the activities at each site, i.e., ECS at the DAACs and the SMC. Each section is constructed in a similar fashion (see Table 5-1).

***Table 5-1. Structure of Site Overviews***

| Section | Title | Content |
|---|---|---|
| 5.X.1 | Key Interfaces | These sections list the key interfaces for carrying out the missions supported by the site. For complete description of the relevant interfaces, see the appropriate Interface Requirements Document or Interface Control Document. |
| 5.X.2 | Mission and Operations Activities | These sections list the operations performed using ECS components for Release B on a site specific basis. The activities are at a summary level. The discussion shall include what is provided by the system and what the operators perform. For a summary of a specific mission, in some cases across DAACs, see Section 3. |
| 5.X.3 | Day in the Life | The operations for a nominal day at each site are described. The descriptions of this section make use of the activities described in Section 4, e.g., an activity may be performed 3 times in a nominal day at a site. The activities of a nominal day are summarized in a Day in The Life Figure. This section shall include operator positions and tasks. |

Before presenting the Site Overviews, definitions for a few items are supplied (Section 5.1). The definitions in Section 5.1 apply to all of the Site Overview sections. Section 5.1 defines the DAAC Modes, e.g., nominal mode, and the User Model data.

There are eight sites addressed in this section:

- Distributed Active Archive Centers (DAACs):
  - Alaska SAR Facility (ASF) - University of Alaska-Fairbanks, Fairbanks, Alaska
  - EROS Data Center (EDC) - Sioux Falls, South Dakota
  - Goddard Space Flight Center (GSFC) - Greenbelt, Maryland
  - Jet Propulsion Laboratory (JPL) - Pasadena, California
  - Langley Research Center (LaRC) - Hampton, Virginia
  - National Snow and Ice Data Center (NSIDC) - University of Colorado, Boulder, Colorado
  - Oak Ridge National Laboratory (ORNL) - Oak Ridge, Tennessee
- System Monitoring and Coordination Center/EOS Science Network (SMC) - GSFC Building 32, Greenbelt, Maryland

The SEDAC at CIESIN is not addressed in this section because the ECS contractor does not conduct operations at CIESIN during Release B. The ECS contractor is not required to install, operate, or maintain hardware and software at the CIESIN SEDAC. The government will provide ECS developed software and documentation to the CIESIN SEDAC. The ECS contractor will provide technical consulting services to CIESIN SEDAC in support of ECS software integration into the CIESISN SEDAC hardware environment.

## 5.1 Definitions of Terms Used in the Site Overviews

### 5.1.1 Definition of DAAC Modes

This section defines the modes in which a DAAC may be operating. The DAAC Modes are used in the Day in the Life Section of each DAAC Site Overview.

The DAAC Modes are defined in Table 5.1.1-1. The list of modes is intended to be exhaustive and non-overlapping, e.g., a DAAC is always operating in one and only one of the listed modes. DAACs will operate predominantly in the nominal DAAC modes. The definitions of major operations allowed within the DAAC modes are also included in this table.

Activities anticipated to be performed while a DAAC is in a particular mode are listed in Table 5.1.1-2. These activities are the same activities as in Section 4. The activities listed for a particular mode are allowed but not required. For several modes, the operations performed are described in other documents, e.g., acceptance testing.

***Table 5.1.1-1. Definitions of DAAC Modes***

| DAAC Mode | Definition |
|---|---|
| Initial Installation, Acceptance and Activation Mode | Fist installation of ECS custom software, COTS software and hardware at a site. Regression testing as required to verify installation. Acceptance testing activities including external interface testing and may involve real live data followed by initial activation of DAAC. |
| Nominal Operation | Typical mode for DAAC operations. It further breaks into Nominal Full Staff and Nominal Reduced Staff. The Nominal Full Staff includes all normal processing and user services. Major operations may include Upgrade Install/Test, IV&V, Training, Campaign, Launch, and Simulation. The Nominal Reduced Staff is similar to the Nominal-Full Staff but with no user services or non-real time services. Major operations may also include Upgrade Install/Test, Training, and continuation of IV&V, Campaign, Launch, and Simulation. |
| Recovery | Mode when an abnormality beyond those addressed in section 4 occurs. Conditions for transition to this mode typically involve catastrophic emergency. |
| **DAAC Mode** | **Definition** |
| Upgrade Install/Test | Conducted in parallel to the normal operational system. Test may be for a CI or a group of CIs in the same operational environments. |
| IV&V | Independent Verification and Validation exercise or operation dedicated to the certification for Mission Ops. IV&V can run parallel to the normal operation. |
| Training | Conducted within the ECS operational environment to allow DAAC personnel to receive required training to operate and maintain the ECS system. |
| Campaign | Conducted in Nominal Full or Reduced Staff Mode to support a campaign of data acquisition for a specific opportunity. |
| Launch | Conducted in Nominal Full or Reduced Staff Mode are activities associated with pre-launch or launch support. |
| Simulation | Performed under Nominal Full or Reduced Staff Mode. Simulation activities utilize the ECS resource to conduct research or verification of certain algorithms. |

## *Table 5.1.1-2. Activities During DAAC Modes*

| | DAAC Mode | | | |
|---|---|---|---|---|
| **System Activities** | **Initial Installation, Acceptance and Activation** | **Nominal Operation-Full Staff** | **Nominal Operation-Reduced Staff** | **Recovery** |
| System Administration (Local) | X | X | | |
| System Administration (System) | X | X | | |
| Backup and Recovery | | | X | X |
| System Configuration Management | X | X | | X |
| Fault Management | X | X | X | X |
| Performance Management (Local) | X | X | | X |
| Performance Management (System) | X | X | | X |
| Security Management (Local) | X | X | X | X |
| Security Management (System) | X | X | X | X |
| Accountability Management | | X | | |
| Resource Planning / Scheduling (Local) | | X | | |
| Resource Planning / Scheduling (System) | | X | | |
| Resource Management & Control (Local) | X | X | X | |
| Resource Management & Control (System) | X | X | X | |
| Management Logistics | | X | | |
| Billing and Accounting | | X | X | |
| Level 0 Data Ingest | | X | X | |
| Elect. Ingest of Ancillary and Non-L0 Data | | X | | |
| Media Ingest of Ancillary and Non-L0 Data | | X | | |
| V0 Data Migration | | X | | |
| Working Storage and Data Archival | X | X | X | |
| Electronic Data Distribution | | X | X | |
| Media Data Distribution | | X | | |
| Production Planning | | X | | |
| Production Processing | | X | X | |
| User Registration | X | X | | |
| User Reporting | | X | | |
| Data Ordering and Tracking | | X | | |
| User Statistics | | X | | |
| SSI&T Initial Delivery | X | X | | |
| Science Software Update | | X | | |
| Schema Maintenance | | X | X | |
| Metadata Management | | X | | |
| Data Management | | X | X | |

### 5.1.2 ECS Services User Request Distributions

The User Characterization Team acts as a service organization supporting developers and the performance model. The User Characterization Team uses multiple sources of information to provide the basis for analysis and continues to refine estimates as new information becomes available. Current sources include the Ad Hoc Working Group for Consumers (AHWGC), the EOSDIS Product Use Survey, the User Pull Technical Baseline, ECS Science User Scenarios, Science User Demographics, and statistics at existing data centers. Data will be further refined when the results of the Ad Hoc Working Group for Consumers (AHWGC) becomes available.

This section briefly defines some of the terminology used in later sections and refers to the documents that the data are derived from. The User Pull Baseline describes the anticipated science user load on ECS for five time frames: April 1997 (as the migration of Version 0 data sets is beginning), April 1998 (when TRMM products are available), April 1999 (when AM-1, Landsat 7, and COLOR products have been added to the system), June 1999 (includes the addition of ALT RADAR and SWS data products), and January 2000.

Reference Documents:

EOSDIS Product Use Survey (September 1995) 161-TP-001-001

Technical Baseline (February 1996) - Attachment I. User "Pull" Baseline

User Characterization Information Catalog (August 1995)

ECS User Model Inputs to System Performance Model: Methodology and Results (January 1995) 160-WK-001-001

User Pull Analysis Notebook (January-February 1995) 160-TP-004-001

User Characterization and Requirements Analysis (September 1994) 194-00312TPW

ECS User Characterization Methodology and Results (September 1994) 194-00313TPW

ECS Scenario Notebook (June 1994) 194-00311TPW

Projected Use of EOSDIS (Release B) By U.S. Non-Science Communities (April 1994)

User Scenario Functional Analysis (September 1994) 194-00548TPW

#### 5.1.2.1 Inputs to the Analyses

The inputs to the user request distributions include ECS Science User Scenarios, the scenario demographics, the geographic distribution of users, the results of the EOSDIS Product Use Survey, and a time of day curve from a machine resident at Goddard Space Flight Center. The following sections describe the inputs at a high level; for more detailed information, the reader is encouraged to obtain the documents listed above.

#### 5.1.2.1.1 ECS Science User Scenarios

User scenarios for the EOSDIS are required to provide detailed information regarding the services that science users will invoke and the data upon which they will operate when using the EOSDIS. A set of 27 scenarios was identified to represent classes of user types based on the variability of the users' "scale of research" and "system access style". Each scenario is a step-by-step description of the services a user will invoke when accessing data archived in the EOSDIS. This data is used in conjunction with user demographics, results of the EOSDIS Product Use Survey, and time-of-day usage curves to estimate various quantities needed by developers.

#### 5.1.2.1.2 Science User Demographics

The number of science users was obtained from the ECS User Pull Technical Baseline (June, 1995). The data in the Technical Baseline are based upon the examination of current data system usage statistics at the DAACs and lengthy conversations with User Services personnel at each of the DAACs.

In order to determine the number of science users expected to use the EOSDIS in a manner similar to that described in each of the scenarios, a demographic analysis of the user community was performed in 1993. This analysis provides a proportion of the total number of users for each scenario (a detailed description can be found in "ECS User Characterization Methodology and Results", June 1994 ).

The geographic distribution of the users is important when one is examining the use of a system like EOSDIS during a 24-hour period. The geographic distribution of U.S. general science users was based on the distribution of EOS-funded Investigators. The distribution of international science users was based on location of research facilities (*ECS User Characterization Methodology and Results*, June 1994) and other qualitative information.

#### 5.1.2.1.3 EOSDIS Product Use Survey

Prior to PDR in June of 1994, estimates of interest in relative product access frequencies were based on user and DAAC disciplines. In the fall of 1994, the User Characterization team developed a product use survey and in April of 1995 it was implemented on the World Wide Web. The purpose of the EOSDIS Product Use Survey was to collect information on relative product access frequencies (RPAFs) for data products which will be archived at each DAAC.

The survey queried scientists about their future needs for browsing and ordering data products that will become available through EOSDIS during the 1998-2000 time period. These access frequency data form the basis for estimating the relative demand for each product, the relative pull on each data server, the relative pull on each DAAC, and the relative pull on each data product level. Approximately 375 completed responses were received and an additional 220 were partially completed; however only completed survey responses were used in analyses. This information assists the system developers in determining the required size of individual data servers, size of communication links, and other related parameters.

#### 5.1.2.1.4 System Usage as a Function of Time of Day

In order to develop a system that is fast and efficient, it is important to know when the heaviest system usage will occur during a 24-hour period. It is generally true that most users will access the ECS during the working hours of approximately 9 am to 6 pm. A time of day usage curve was obtained from a machine resident at Goddard Space Flight Center to represent a realistic system usage curve during a 24-hour period. However, because of the large number of international users (approximately 30%), this time of day curve is applied to each of the 24 time zones individually; the results are then summed, taking care to preserve time differences, to obtain a daily overall system usage pattern that includes all users..

It is estimated that 67% of the science users are located in the U.S. and an additional 20% are located in Europe; both groups tend toward an eight or nine hour work-day. Thus, the nine hour work-day assumption can be applied without introducing significant error. The curve used by the User Characterization Team is compared below to current WWW usage statistics from Goddard Space Flight Center and the Jet Propulsion Laboratory during the months of January through May of 1995. The shapes of the curves are very similar, thus supporting the validity of the "killians" curve. See Figure 5.1.2.1.4-1 for the Comparison of User Pull Data and Home Page Usage at GSFC and JPL.

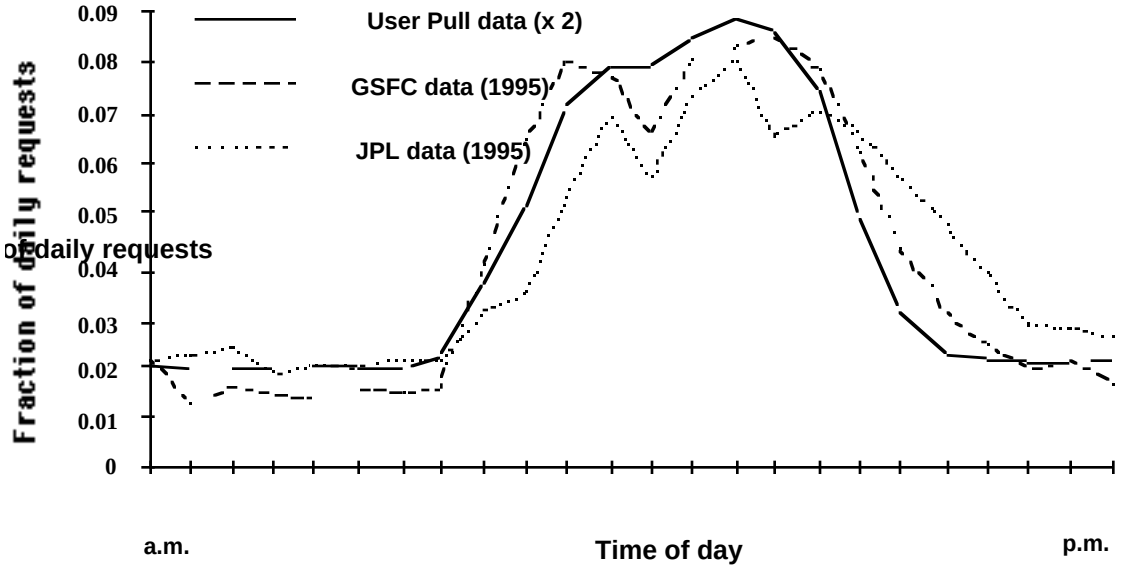


***Figure 5.1.2.1.4-1. Comparison of User Pull Data and Home Page Usage at GSFC and JPL***

### 5.1.2.2 Methods and Results

Prior to PDR, 15 high-level services required to accomplish user tasks were identified and defined (see section 5.1.2.3) from the set of 27 science user scenarios. Subsequent to PDR, the services were further subdivided into a total of 63 new lower-level services. See Table 5.1.2.2-1 for the Mapping of the 63 Subservices to the 15 High-Level Services. This section contains definitions of the original 15 services and a mapping of the new 63 services to the old ones. One can use the frequency of these service invocations to derive estimates of network traffic, the load on each data server, and other similar quantities.

The basic method used in obtaining the number of service invocations per year was to examine each step in a scenario to determine which of the 63 services was invoked. Then, the number of times that this step was repeated by one user per year was recorded. This number was then multiplied by number of users per year who are expected to perform a similar scenario. This procedure was repeated for each step in all the scenarios. These values were then summed over all scenario steps to arrive at an estimate for number of service invocations in one year for each service over all scenarios. These values were then summed to obtain the total number of service invocations per year. For additional details regarding the methodology for the distributions presented here, please see "ECS User Model Inputs to System Performance Model: Methodology and Results", January 1995.

#### 5.1.2.2.1 Service Definitions

*Simple Search/One Site* A simple search is a search for data and/or information that is completely independent of all other data and/or information. Specific geographic and temporal criteria may also be specified. This query is specific enough that the system need search only one site to locate the products of interest.

*Simple Search/Multi-Site* This type of search is the same as in the previous type; however, the query is so general that the system must search several sites to locate the products of interest.

*Match-up Search/One Site* A match-up search takes place using search criteria that have been used for the previous search. For example, a user has located a browse product of interest and then wishes to find data (Level 0 through Level 4) or information (Guide, QA stats, Product History, etc.) that "match" his product of interest. The user may also ask for other data sets that have the temporal and spatial specifications as those of the previous search. The search function compares each additional data set only to the one retrieved in the pervious search. Mathematically, the search function identifies the intersection of each additional data set desired and the set already retrieved. Again, a "one site" search results if the system searches only one location for the requested information or data.

*Match-up Search/Multi-Site* This is similar to the previous type of match-up search, except that the system must search more than one location.

*Coincidence Search/One Site* A coincidence search takes place when a user wishes to locate two or more data sets that coincide in time and/or space. This type of search is different from a match-up search because each of the specified data sets must be compared for

coincidence with each of the others. Mathematically, the search function identifies the intersection of all data sets. This is different from a match-up search because what is desired in a coincidence search is the intersection of all the data sets, whereas in a match-up search, the desire is the separate intersections of each data set with the one being "matched". The search is "one site" if only one location is searched upon.

*Coincidence Search/Multi-Site* This search type is the same as the previous type of coincidence search except that more than one location is searched.

*Archive* Archive is a collection of services whereby appropriate structures are introduced (and created when necessary) into the archival infrastructure. Some of these structures are created during (or exist prior to) the invocation of the *ingest* and *produce* services. This service does not apply to temporary products.

*Ingest* The set of services by which existing data are brought into the system. The data being ingested may also be algorithms. This is different from the Archive service in that ingested data need not always be archived (if not intended for permanent storage).

*Inspect* This service allows the user to visualize data and other information (such as documentation). This includes visualizations such as animation (movie loops), images, hypertext, and other types of graphical displays.

*Produce* This service causes new data to be produced from existing data. For example, if one desires the display of the difference between two parameters, the user must first produce the difference values from the existing parameters. This service does NOT include transformations between coordinate systems because the data are not produced again; they are simply transformed into a different frame of reference.

*Exchange* The exchange service provides a path for data to flow out of the system. It is invoked when data is delivered to a user as the result of an ad hoc order.

*Exchange/Automatic Deliver* This service is invoked when data is delivered to a user as the result of a standing order.

*Manipulate* The manipulate service allows a user to tailor existing data to his needs. It includes coordinate transformation, all types of subsetting, and subsampling of data.

*Modify* This service allows change-in-place of data. It is invoked when data is deleted, or when estimated ephemeris data is replaced by the actual data.

*Acquire* This service is invoked in order to cause data not currently in the system to be ingested and/or exchanged. The data type is already defined, but the particular instantiation of the data that the user wants is not. This includes Data Acquisition Requests (DARs), standing orders, and subscriptions.

***Table 5.1.2.2-1 Mapping of the 63 subservices to the 15 high-level services***

| | |
|---|---|
| Simple Search One Site | *no subservices* |
| Simple Search Multi-Site | *no subservices* |
| Matchup Search One Site | *no subservices* |
| Matchup Search Multi-Site | *no subservices* |
| Coincidence Search One Site | *no subservices* |
| Coincidence Search Multi-Site | *no subservices* |
| Archive | Archive file, Save Latitude/Longitude, Save to file. |
| Ingest | Ingest file, Ingest Metadata. |
| Inspect | Animate, Display, Display 3-D Plot, Display Contour Plot, Display Coverage Map, Display Data, Display Figure, Display Image, Display Map, Display Numeric, Display Scatter, Display Text, Display X-Y Plot, Re-Display Contour, Re-Display Text, Zoom in. |
| Produce | Compute Mean, Create 3-D Plot, Create Contour, Create Coverage Map, Create File, Create Image, Create Map, Create Scatter Plot, Create X-Y Plot, Produce, Reformat, Run Orbital Model, Run Process. |
| Exchange | Distribute, Interactive Download, Place Order, Place Order from File, Place Order from List. |
| Exchange/ Automatic Deliver | Check subscription list, Send e-mail |
| Manipulate | Coordinate Transformation, Parametric Subset, Spatial Subset, Temporal Subset, Spectral Subset, Subsample, Subset Results List. |
| Modify | *no subservices* |
| Acquire | *no subservices* |
| Additional Services | Append file, Compute Cost, Cut and Paste, Edit file, Retrieve, Read file, Setup Account, Video Teleconference, Locate |

#### 5.1.2.2.2 Service Distribution by type

The total number of service invocations for each service and for all services was obtained as described in section 5.1.2.2.1. The fraction for each service type was obtained by dividing each service total by the total number of invocations for all services. These fractions are shown below in Figure 5.1.2.2.2-1.

Figure 5.1.2.2.2-1 shows that about 16% of the services invoked are "retrieve". This is not surprising because each time that data is pulled from the archive, a "retrieve" occurs The service with the second highest rate of invocation is "spatial subset", indicating that science users would like to receive only the data they need and not data for an area pre-defined by the data producer.

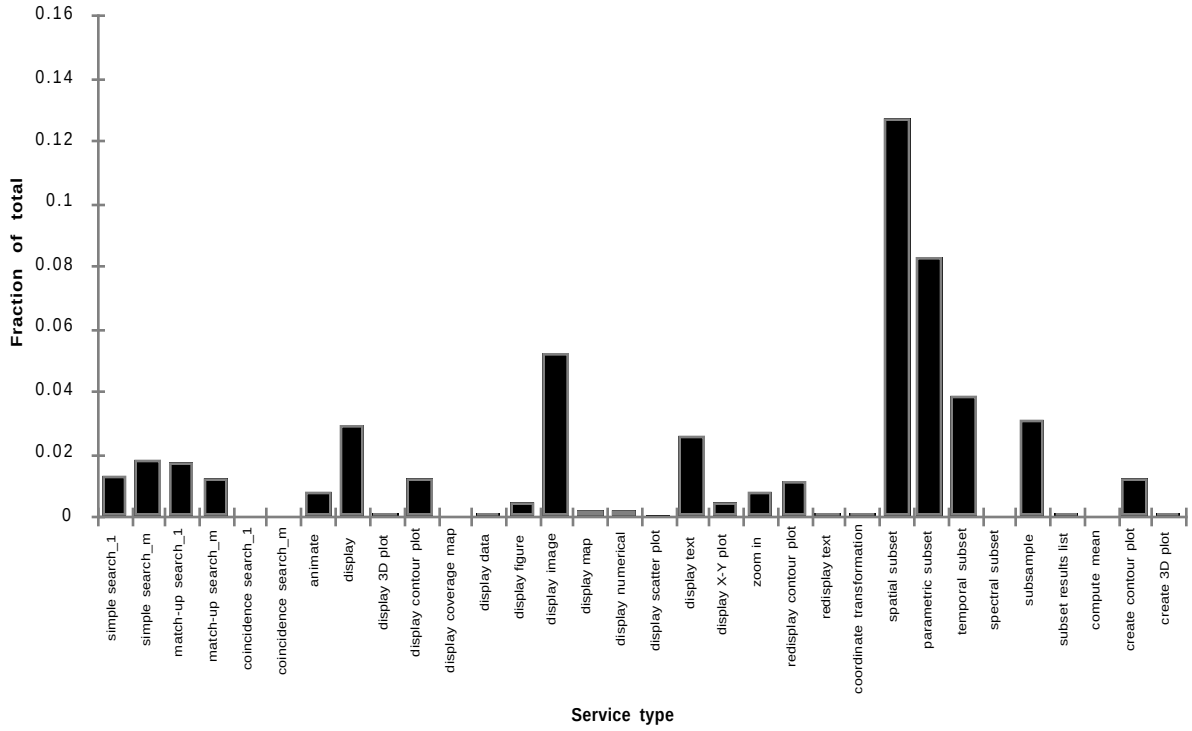


***Figure 5.1.2.2.2-1. Distribution of Services by Type (1 of 2)***

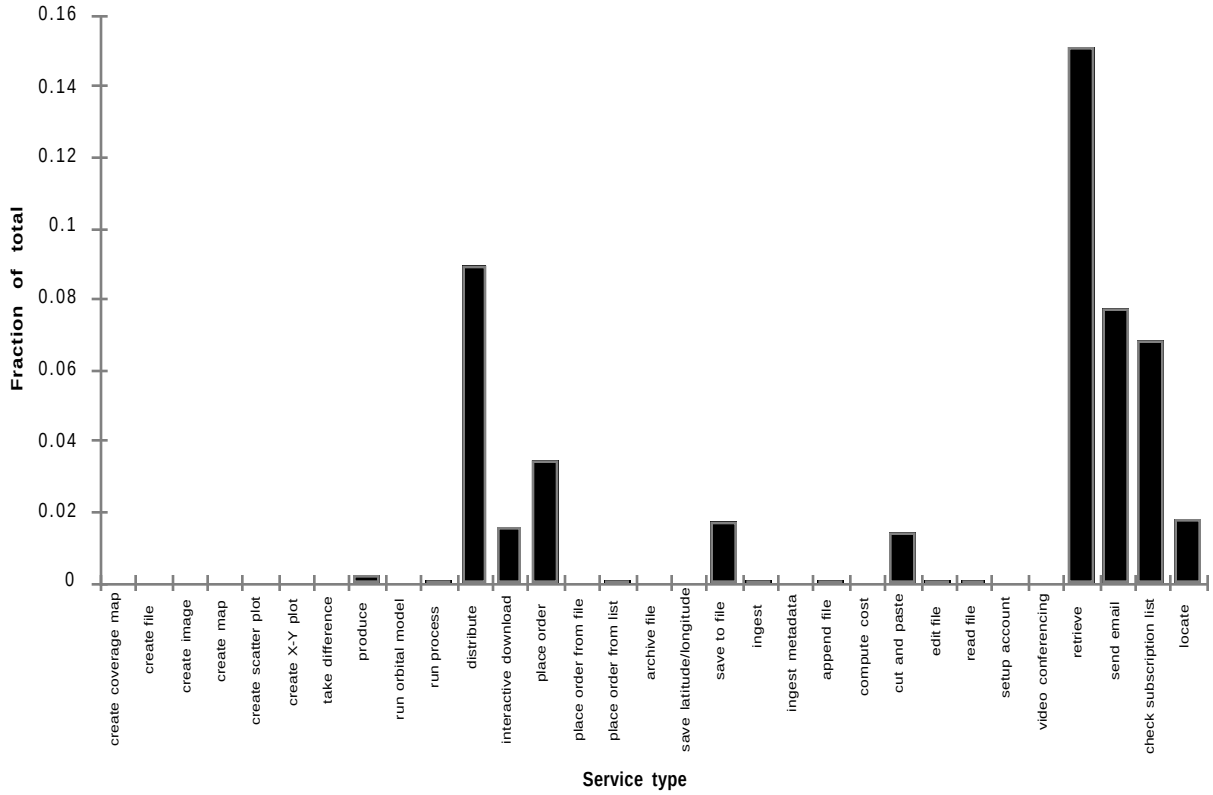


***Figure 5.1.2.2.2-1 Distribution of Services by Type (2 of 2)***

### 5.1.2.2.3 Service Request Rate

Assuming that a user has a 250-day work year after excluding holidays and weekends, the total number of service invocations in a year was divided by 250 days to obtain a daily estimate. This number of services was then distributed across the 24 time zones according to the estimate for the number of users in each time zone. A normalized time-of-day access pattern was applied to the number of service invocations for each time zone. Then, the number of service invocations per day in each time zone was totaled for all time zones and referenced to 00:00 GMT taking care to preserve the differences in local time of day. The curves was then referenced to Eastern Standard Time. Finally, the average number of service requests per minute was determined by dividing the number of service invocations per 30-minute period (the resolution of the original time of day curve) by 30. Thus, each 30-minute datum in the service request rate curve represents an average for that 30-minute time interval. See Figure 5.1.2.2.3-1 for a graphical representation of the Service Request Rate by Time of Day for all Five Epochs.

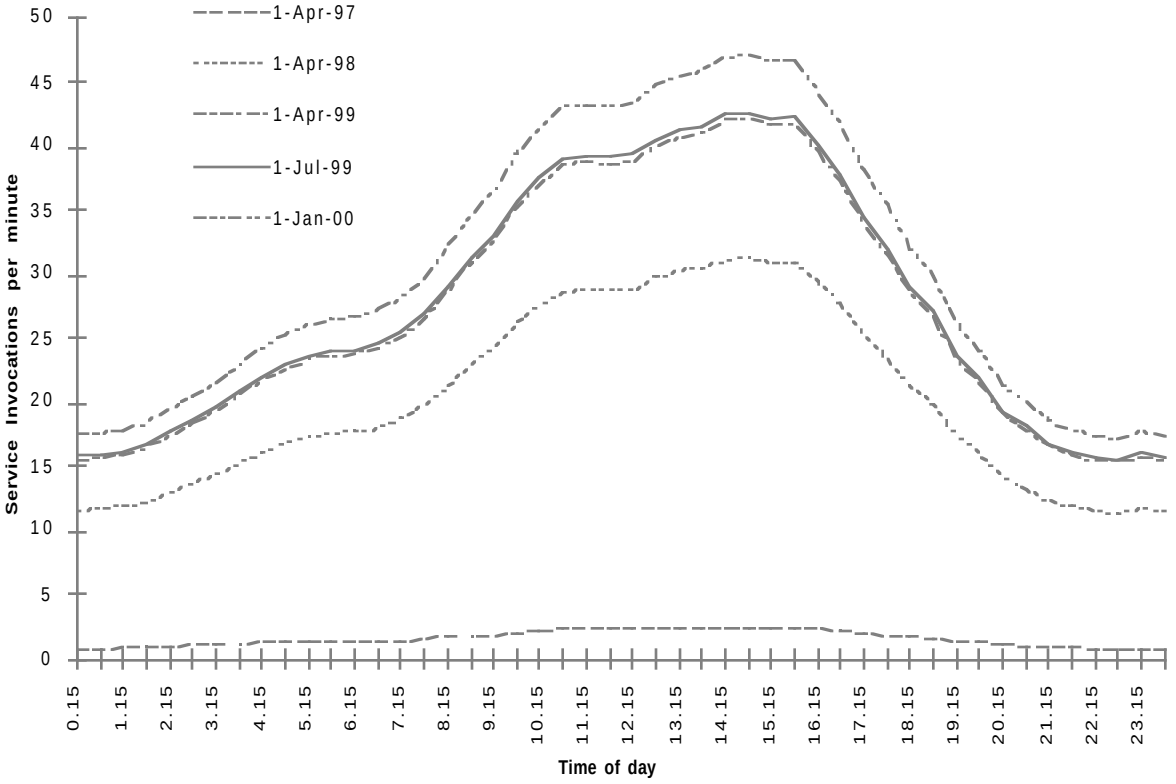


***Figure 5.1.2.2.3-1. Service Request Rate by Time of Day for all Five Epochs***

## 5.2 Alaska SAR Facility (ASF)

This section describes the activities at the ECS portion of ASF during the operation of ECS Release B.

### 5.2.1 Key Interfaces: ASF DAAC-ECS

The ASF ECS DAAC interfaces with multiple entities external to the DAAC. Figure 5.2.1-1 schematically illustrates the interfaces between the ECS at the ASF DAAC and its external entities.

The following further describes the external entities, including those identified to support interface testing:

- ASF V0 DAAC - This interface provides access to data or other information that comes into the DAAC via the V0 IMS system but are archived into ECS, or into both ECS and the ASF V0 archive. The migration of V0 data sets into ECS will occur via this interface.
- SMC - This interface provides the capability for the ASF DAAC to receive configuration data, scheduling directives, policy and procedure information, and user registration information. The ASF DAAC sends its system performance, accounting data, resource utilization data and status reports to SMC.
- Users - This interface is the mechanism for user community access to ECS data, products and services.
- ASTER GDS - This interface provides ASF ECS user or ASTER GDS user the ability to view the data holdings and order production data from ASTER GDS.
- ASF DAAC-Unique - This interface allows for ECS to provide product requests to the ASF DAAC-Unique system, and for the ASF DAAC Unique system to provide products to ECS for archive and distribution.

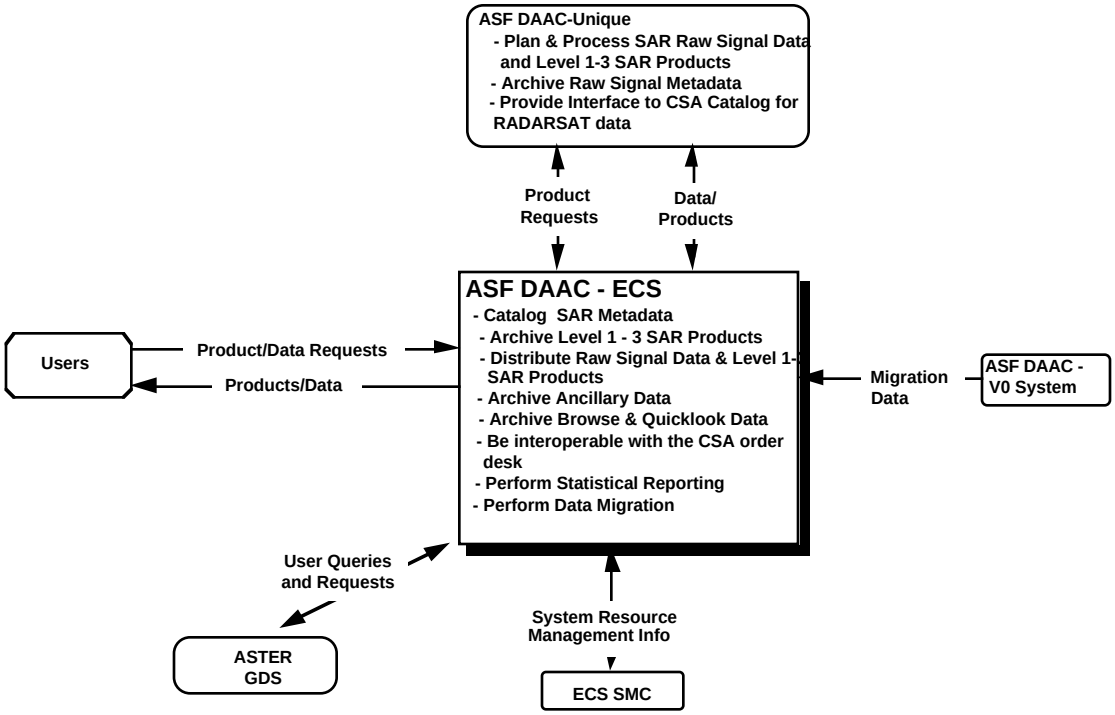


***Figure 5.2.1-1. Release B Key Interfaces: ASF DAAC-ECS***

### 5.2.2 ASF ECS Related Mission and Operations Activities

This section describes the mission and operation activities specific to the ECS portion of the ASF DAAC during Release B. The ASF Products from the Technical Baseline and the ASF User Pull Baseline during Release B are also included in this section.

#### 5.2.2.1 ASF Release B

This is a list of the mission and operation activities specific to the ECS portion of the ASF DAAC during release B for the support of ERS1/2, JERS1, and RADARSAT.

- Support access to V0 data products
- Maintain catalog of raw signal data from ERS1/2 & RADARSAT
- Canadian Space Agency (CSA) catalog interoperability
- User interface to request production of product from raw data
- Maintain catalog/archive of low resolution Level 1 products

- Maintain catalog/archive of derived products (level 2 and higher)
- Temporary storage for level 1 products other than low resolution
- Provide billing/accounting for user orders of ASF products
- Support access/distribution of ASFproducts
- Maintain archive/access of ancillary data products
- Level of involvement in ASF system-wide statistical accounting/reporting

### 5.2.2.2 ASF Products from Technical Baseline

Table 5.2.2.2-1 provides the products in the ECS Technical Baseline which are either produced or archived at the DAAC in Release B.

***Table 5.2.2.2-1. ASF Release B Product Baseline***

| Platform | Production DAAC | Archival DAAC | Product Level |
|---|---|---|---|
| ERS-1 | ASF | ASF | 1 |
| ERS-1 | ASF | ASF | 2 |
| ERS-1 | ASF | ASF | 3 |
| ERS-2 | ASF | ASF | 1 |
| ERS-2 | ASF | ASF | 2 |
| ERS-2 | ASF | ASF | 3 |
| JERS-1 | ASF | ASF | 1 |
| JERS-1 | ASF | ASF | 2 |
| RADARSAT | ASF | ASF | 1 |
| RADARSAT | ASF | ASF | 2 |
| RADARSAT | ASF | ASF | 3 |

### 5.2.2.3 ASF User Pull Baseline

Table 5.2.2.3-1 lists the Data Volumes and Usage Estimates for the ASF DAAC. See section 5.1.2 for a description of how the data was developed and definition of each of the parameters.

***Table 5.2.2.3-1. ASF Data Volumes and Usage Estimates***

| | 1-Apr-97 | | 1-Apr-98 | | 1-Apr-99 | | 1-July-99 | | 1-Jan-00 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Low | High | Low | High | Low | High | Low | High | Low | High |
| **Archive Vol (TB)** | 0.000 | 0.000 | 0.594 | 0.594 | 1.006 | 1.006 | 1.110 | 1.110 | 1.316 | 1.316 |
| **Distrib. Vol/yr (TB)** | 0.000 | 0.000 | 1.188 | 1.188 | 27.105 | 27.105 | 27.105 | 27.105 | 27.105 | 27.105 |
| **GB/day produced/migrated** | 0.00 | 0.00 | 1.63 | 1.63 | 73.13 | 73.13 | 73.13 | 73.13 | 73.13 | 73.13 |
| **#Users/yr** | 0 | 0 | 1000 | 1500 | 1500 | 2000 | 1700 | 2000 | 1700 | 2000 |
| **#DAAC Accesses/yr** | 0 | 0 | 10000 | 30000 | 15000 | 40000 | 17000 | 40000 | 17000 | 40000 |

### 5.2.3 Day in the Life of ECS at the ASF DAAC

Activities described in this section occurred on Wednesday, 01-Sep-99, during Epoch k. This section provides a retrospective look at the operational activities of the day. That is, it is the "as executed" data for that day. Activities (and their key metrics) performed with ECS resources at the DAAC are shown in Table 5.2.3-1. Note that these are daily averages for Epoch k. Data for this day may vary from the average. Figure 5.2.3-1 shows a composite summary of these activities.

Figures 5.2.3-2 through 5.2.3-8 show Release B and Release C activities leading up to and during this period. Activities related to Releases C & D missions have not been defined. Some non-operational activities may have an impact on operations by reassigning resources from operations to test. However, this "Day in the Life" material assumes there were no impacts from these activities to ingest, production, archive and data distribution operations.

***Table 5.2.3-1. Activities in the Day in the Life of ECS at ASF (1 of 2)***

| Activity | Description | Metrics (daily average) |
|---|---|---|
| ECS production planning | Processing<br>• None<br>Reprocessing<br>• None | Number of processes |
| ECS ingest | Processing<br>• RADARSAT, ERS-1, ERS-2 and JERS ingest for distribution and selected archive<br>Reprocessing<br>• None<br>Other*<br>• Ad Hoc data** | Ingests per day<br>48 ingests per day<br>16 ingests from miscellaneous sources |
| ECS product generation | • None | |
| ECS archive | Processing<br>• RADARSAT, ERS-1, ERS-2 and JERS selected archive<br>Reprocessing<br>• None<br>Other*<br>• Ad Hoc data** | # of Files / Vol. (MB)<br>1,610 / 72,000<br>16 / 16 |
| ECS electronic data distribution through ECS client or web | • User pull<br>• Number of user accesses per day | Available 7 days/week, 24 hours/day<br>100 |
| ECS hard media data distribution | • Distribution of hard media | Vol. (MB) / # of Orders<br>72,000 / 7 |

***Table 5.2.3-1. Activities in the Day in the Life of ECS at ASF (2 of 2)***

| Activity | Description | Metrics (daily average) |
|---|---|---|
| ECS user services | • Staffed hours | 5 days/week, 8 hours/day |
| ECS operations | Science data production<br>• None<br>Other operations<br>• Staffed hours<br>• Un-staffed hours | <br><br><br>5 days/week, 8 hours/day<br>Remote monitoring from SMC |
| ECS engineering | • Staffed hours | 5 days/week, 8 hours/day |

* In accordance with the V0 migration plan, it is assumed that all V0 data has been migrated prior to Sep-99.

** "Ad Hoc" data are used as a place holder for any miscellaneous files that are archived. Examples include files ingested from hard media or electronically from users/SCFs. Ad Hoc archive writes are estimated at 1% of the files (at 1 MB/file) from RADARSAT, ERS-1, ERS-2 and JERS ingest.

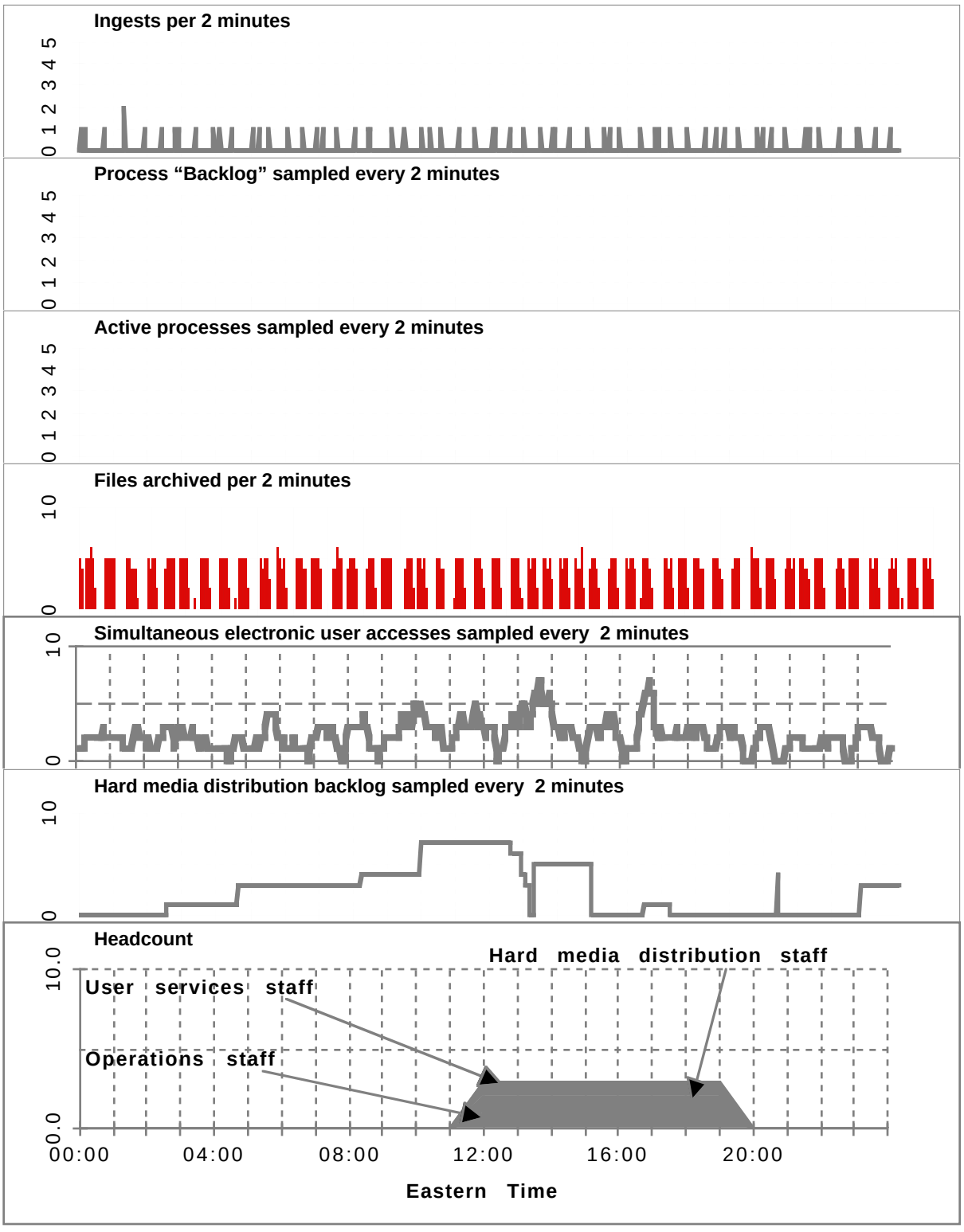


***Figure 5.2.3-1. Overview of Day in the Life of ECS at ASF***

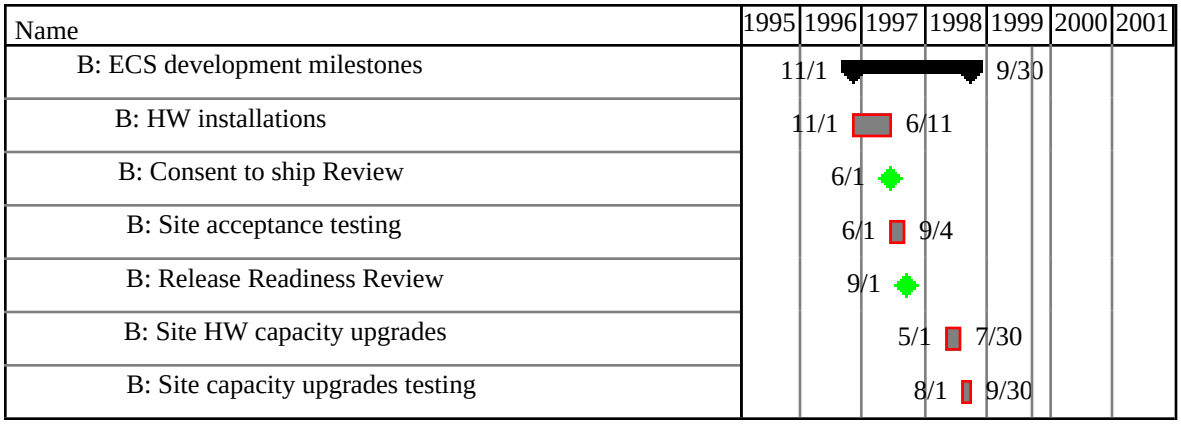


***Figure 5.2.3-2. ASF Related Release B Development Milestones***

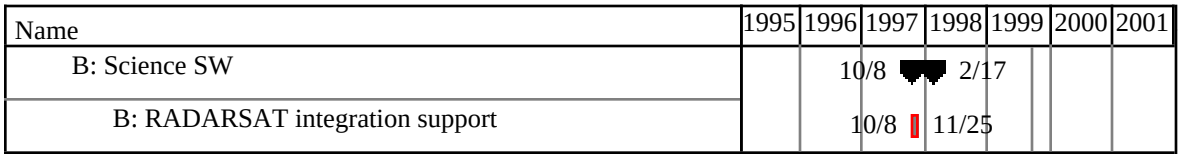


***Figure 5.2.3-3. ASF Science SW Activities***

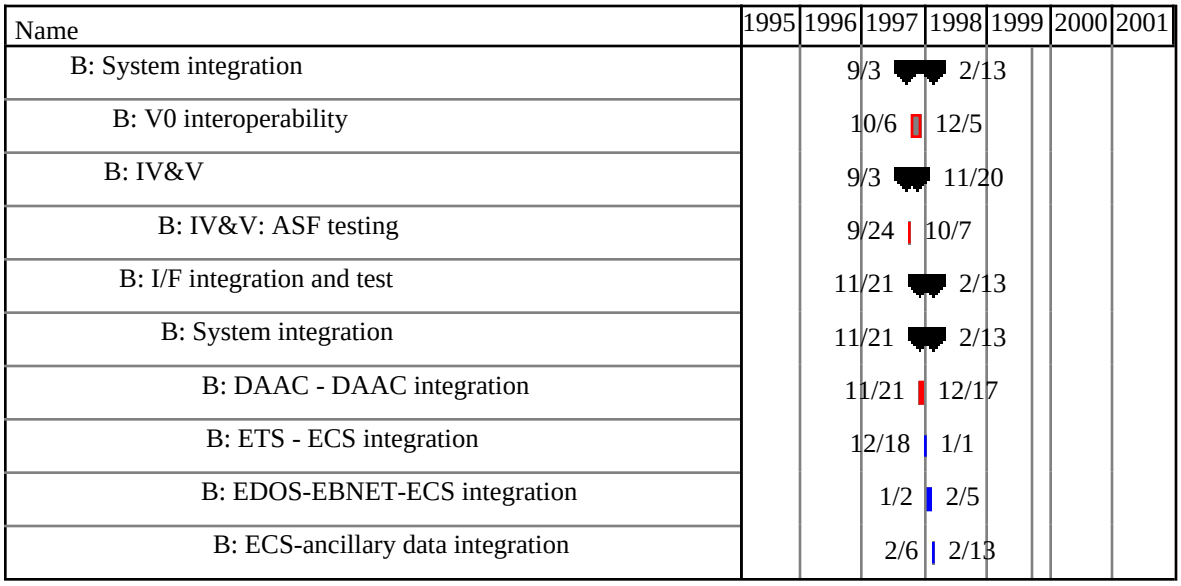


***Figure 5.2.3-4. ASF System Integration Activities***

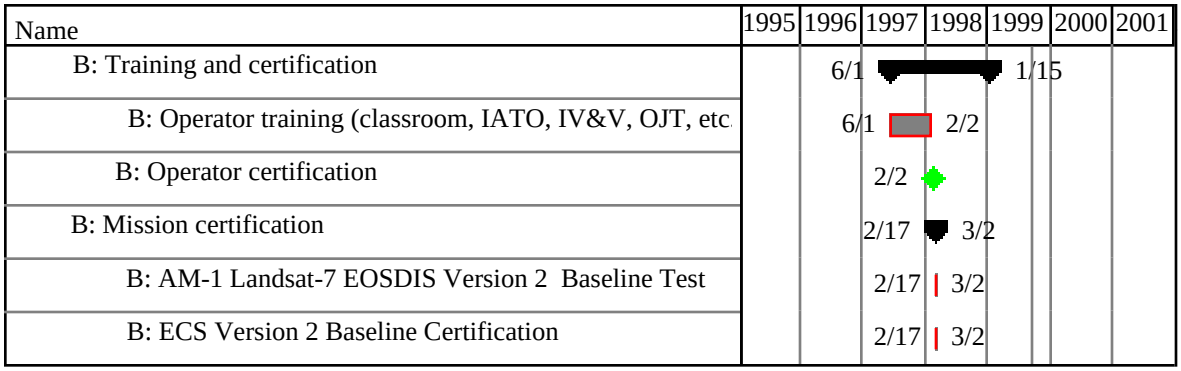


***Figure 5.2.3-5. ASF Training and Certification Activities***

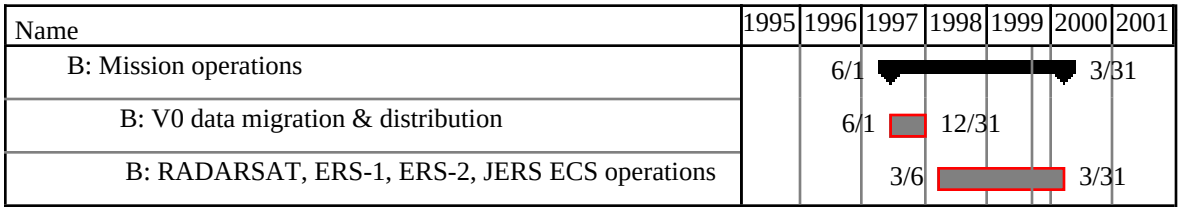


***Figure 5.2.3-6. ASF Mission Operations Activities***

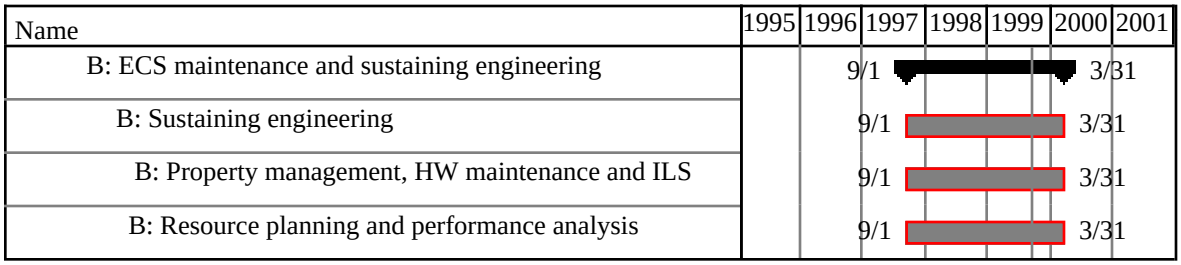


***Figure 5.2.3-7. ASF Maintenance and Sustaining Engineering Activities***

| Name | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 |
|---|---|---|---|---|---|---|---|
| C: Release C | | | | 2/1 | | | 4/1 |
| C: ECS development milestones | | | | 2/1 | | | 4/1 |
| C: HW installations | | | | 2/1 | | 7/30 | |
| C: Consent to Ship Review | | | | | 11/1 | | |
| C: ECS independent acceptance testing | | | | | 11/1 | 12/1 | |
| C: Release Readiness Review | | | | | 11/1 | | |
| C: Operations transition (estimated) | | | | | | 4/1 | |

***Figure 5.2.3-8. ASF Related Release C Development Milestones***

### 5.2.3.1 ASF Production Operations

ECS does not provide science data production functionality at ASF.

### 5.2.3.2 ASF Archive Operations

The Resource Manager/Archive Manager monitors the insertion of files into the archive. The figures in this section show the archive writes for activities shown in Table 5.2.3-1.

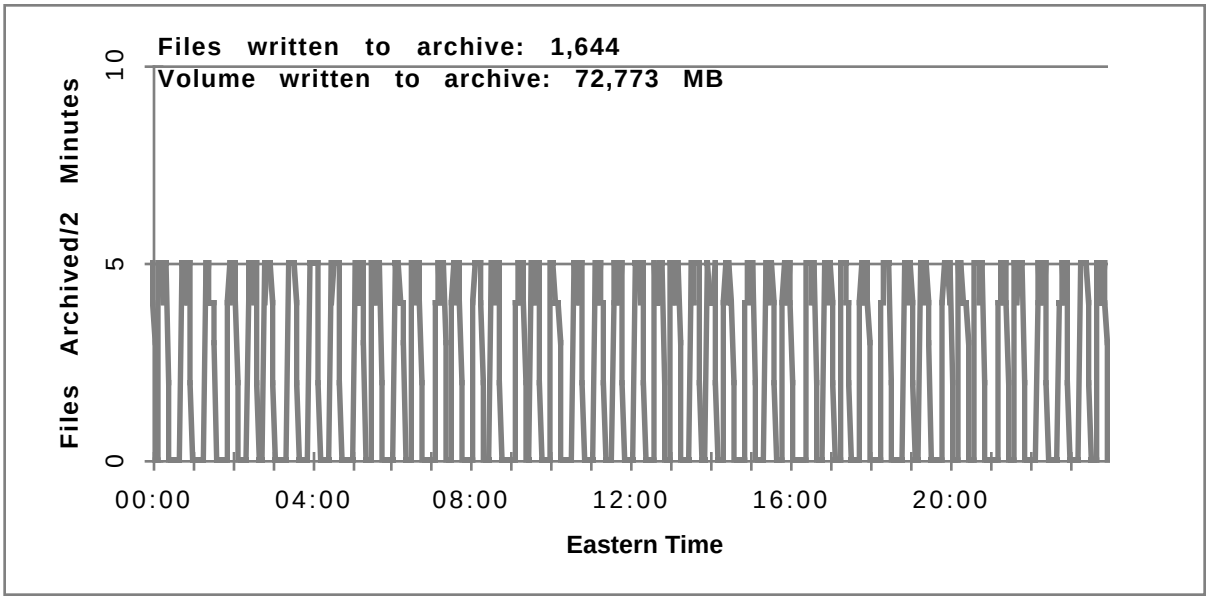


***Figure 5.2.3.2-1. ASF RADARSAT, ERS-1, ERS-2, and JERS Archive Writes***

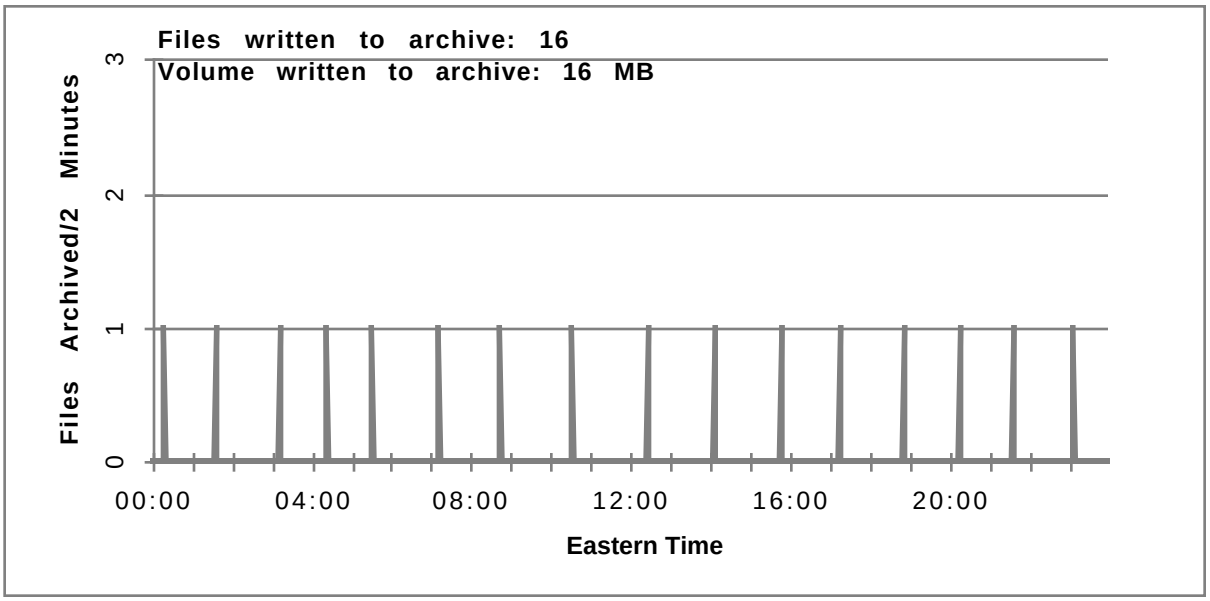


***Figure 5.2.3.2-2. ASF Ad Hoc Archive Writes***

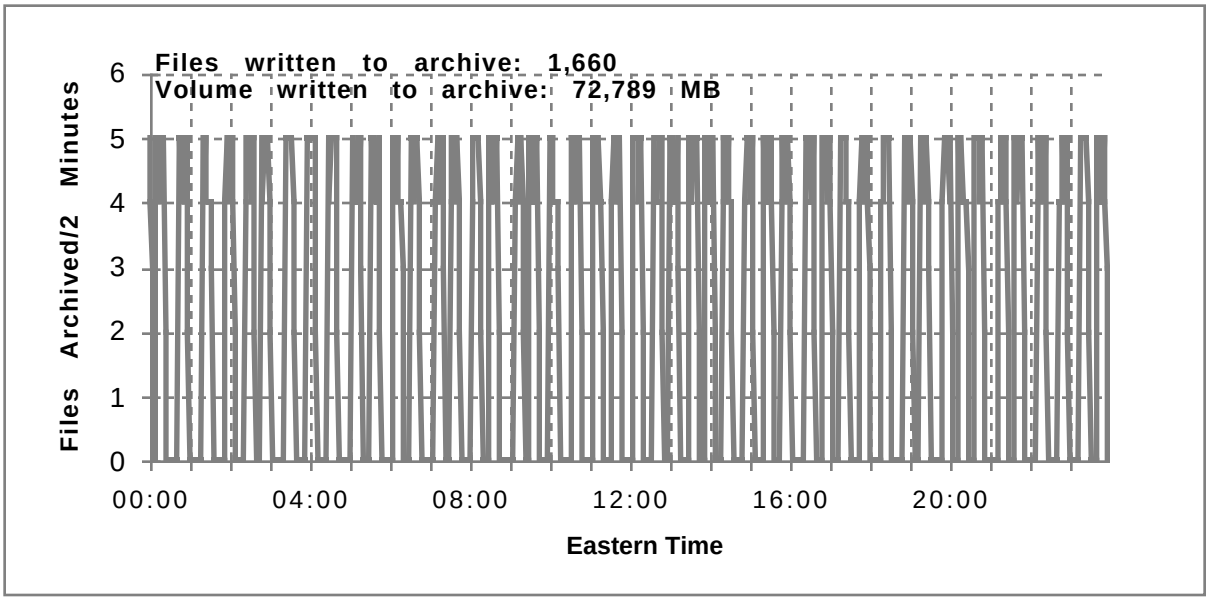


***Figure 5.2.3.2-3. ASF Composite Archive Writes***

### 5.2.3.3 ASF Product Distribution Operations

#### 5.2.3.3.1 ASF Hard Media Distribution Operations

Table 5.2.3.3-1 summarizes the key parameters that influence distribution of hard media. The following steps in the creation of a media shipment are assumed:

1. Load media and initialize. The operator prints and applies the media labels, loads the media (either CD or Tape), and initiates writing of the media. It is assumed that any given order is limited to no more than 10 pieces of media. Larger orders are assumed to be segmented into multiple smaller orders.
2. Media creation. Data are written to the media.
3. Unload/reload. After the media are created, the media are unloaded and reloaded into a different device for a quality assurance read check.
4. Media QA. All data written to the media are read and compared to the original data.
5. Package. Media are unloaded, packaged, addressed, etc.

Figure 5.2.3.3-1 shows the day's hard media distribution backlog in terms of orders and media (and how it changed throughout the work day) for all data sets distributed by ECS. Figure 5.2.3.3-2 shows distribution of orders and number of media mapped against order size. Table 5.2.3.3-2 summarizes the day's media creation and distribution activities.

***Table 5.2.3.3-1. ASF Hard Media Distribution Parameters***

| Topic | Assumption |
|---|---|
| Hours of hard media distribution | 5 days per week, 8 hours per day |
| Number of media distribution operators | 1 per shift* |
| Touch time assumptions:<br>1. Load media and initialize<br>2. Media creation<br><br><br><br>3. Unload/reload<br>4. Media QA<br>5. Packaging | <br>5 min. for 1st piece in an order, 1 min. for each additional piece of media<br>Tape:<br>• 500 KB/sec<br>CD-ROM<br>• 250 KB/sec<br>5 min. for 1st piece in an order, 1 min. for each additional piece of media<br>See step 2.<br>10 min. for 1st piece in an order, 2 min. for each additional piece of media |
| Minimum order size | 100 MB |
| Media volume capacity<br>1. CD-ROM<br>2. Tape | <br>2,000 MB<br>10,000 MB |

* May also perform other functions including resource management, hard media ingest, and/or mail distribution

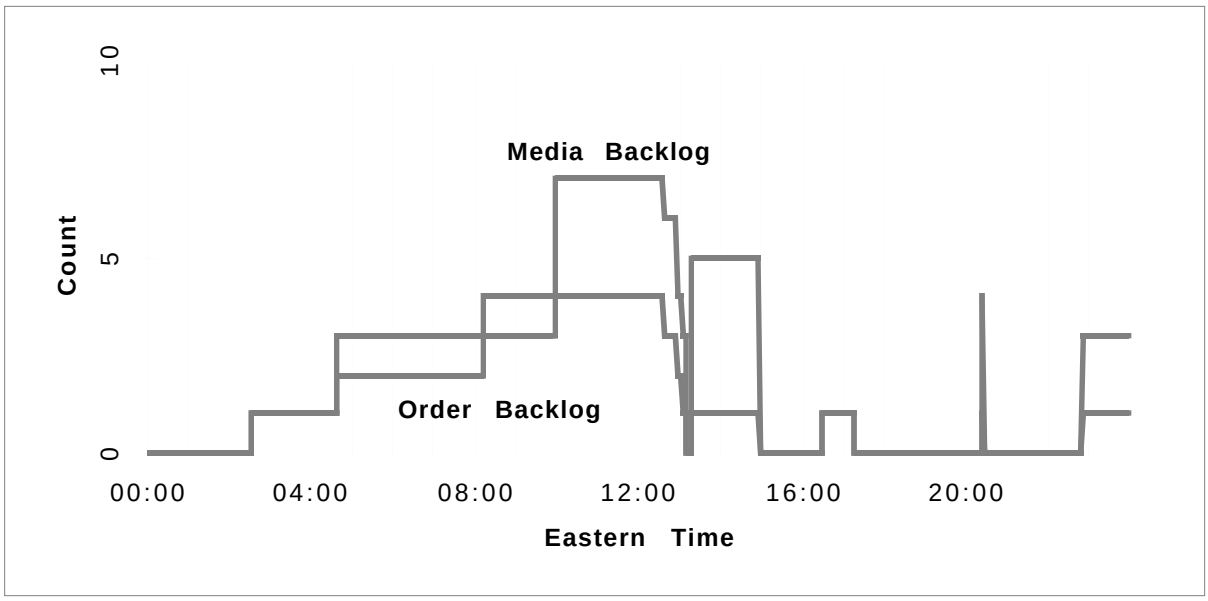


***Figure 5.2.3.3-1. ASF Hard Media Distribution Backlog***

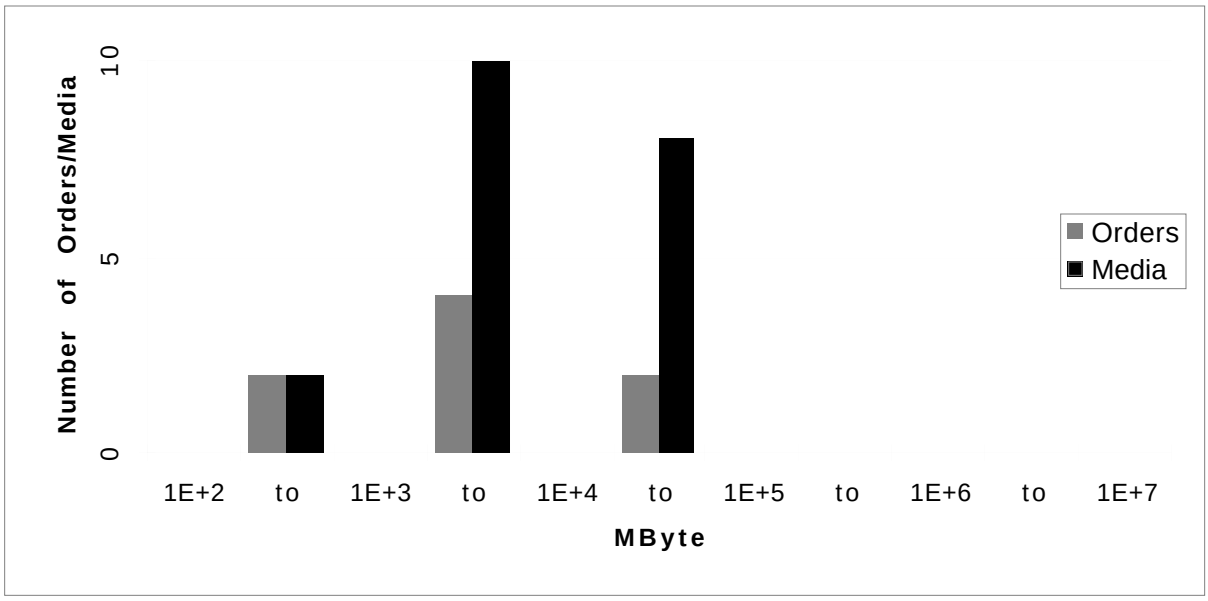


***Figure 5.2.3.3-2. ASF Orders and Media by Order Volume***

*Table 5.2.3.3-2. ASF Media Distribution Summary*

| Topic | Number of orders | Volume (MB) | Number of media |
|---|---|---|---|
| Start of day in work | 1 | 289 | 1 |
| Start of day backlog | 0 | 0 | 0 |
| Orders received | 8 | 82,217 | 20 |
| Data distributed | 5 | 6,794 | 6 |
| End of day in work | 3 | 71,128 | 12 |
| End of day backlog | 1 | 4,584 | 3 |

### 5.2.3.3.2 ASF Electronic Distribution Operations

Electronic distribution is performed 24 hours/day, 7 days/week. Figure 5.2.3.3-3 shows the day's distribution of user sessions that connect to ECS through the ASF DAAC.

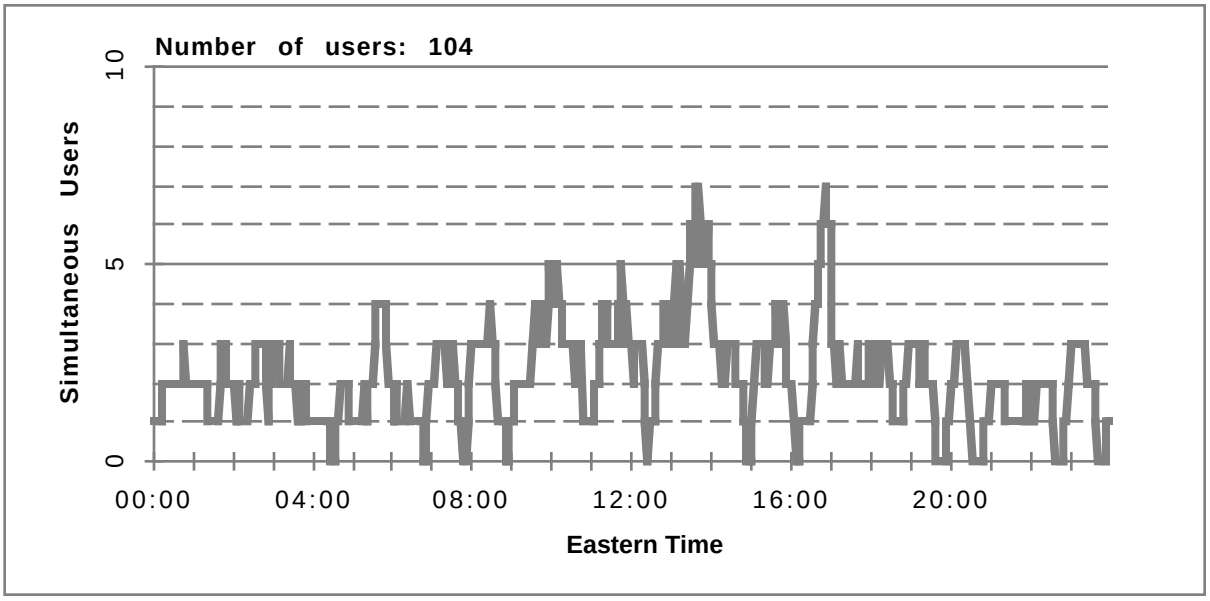


*Figure 5.2.3.3-3. ASF User Sessions*